AMSAT News Service Weekly Bulletins
Issue: ANS-316
Date: 2023-11-10
Sources: amsat-ans-2023-ans-316-weekly-hyperkitty-43009a871f.txt

---

AMSAT NEWS SERVICE
ANS-316

In this edition:

* Trends in Propulsion Systems for Small Satellites
* FO-99 Re-enters
* URESAT-1 Designated Spain-OSCAR 120 (SO-120)
* New Satellite Distance Records
* Changes to AMSAT-NA TLE Distribution for November 10, 2023
* ARISS News
* Upcoming Satellite Operations
* Hamfests, Conventions, Maker Faires, and Other Events
* Satellite Shorts From All Over

The AMSAT News Service bulletins are a free, weekly news and information service of AMSAT, The Radio Amateur Satellite Corporation. ANS publishes news related to Amateur Radio in Space including reports on the activities of a worldwide group of Amateur Radio operators who share an active interest in designing, building, launching and communicating through analog and digital Amateur Radio satellites.

The news feed on http://www.amsat.org publishes news of Amateur Radio in Space as soon as our volunteers can post it.

Please send any amateur satellite news or reports to: ans-editor [at] amsat.org

You can sign up for free e-mail delivery of the AMSAT News Service Bulletins via the ANS List; to join this list see: https://mailman.amsat.org/postorius/lists/ans.amsat.org/

ANS-316 AMSAT News Service Weekly Bulletins

To: All RADIO AMATEURS
From: Radio Amateur Satellite Corporation
712 H Street NE, Suite 1653
Washington, DC 20002

DATE 2023 November 12

Trends in Propulsion Systems for Small Satellites

Recently AMSAT News Service had the opportunity to interview Jonathan Brandenburg, KF5IDY, AMSAT Assistant VP – Engineering about recent trends in propulsion systems for small satellites.

ANS: “Jonathan, we understand you are looking at propulsion systems that might be added to future satellites. What is the impetus for this?”

JB: “As we all know, debris is becoming a big issue in space. The amount of debris in space is growing and any of it that hits a satellite can cause significant damage. The European Space Agency estimates that there are more than 35,000 pieces of space debris, 2/3 of which is in LEO. Further, for the first time the FCC has issued a fine to Dish Network because they were not able to move its defunct EchoStar-7 satellite fully into the intended disposal orbit. Dish was supposed to move it 186 miles further from the earth, but it only reached 76 miles because the satellite ran out of fuel.

This fine is likely a harbinger of things to come.

“The FCC has pending requirements to be able to deorbit on command. Also, we are beginning to hear rumblings that we may have to be able to maneuver satellites to avoid a “conjunction event,” that is a collision. This is just in the conversation stage.”

“In addition, we often wish to reach higher orbits with AMSAT’s satellites. With the ability to thrust we can launch into a lower and more accessible orbit then raise our orbit with onboard thrusters.

ANS: “That is very crucial capability for AMSAT to add. What is required to do this and how difficult will it be to achieve?”

JB: “We need three things: a GNSS – a Global Navigational Space System, an ADCS – an Attitude Determination, and Control System, and a thruster.

“A GNSS is needed to determine the exact position of the satellite. We have a current ASCENT project in progress for this.

“We have to be able to accurately determine the position and orientation of the satellite so that we know the thrusters are oriented in the correct direction when they are fired. We are currently planning to fly an ADCS on the GOLF-TEE satellite which estimated to be launched in Q2 2025. The plan is to fly an ADCS purchased from CubeSat.

“We have a new ASCENT project for small satellite thrusters. This is our topic of discussion here. There are many different types of thruster systems. Examples are:
- Solid motor thrusters which are very powerful,

- Hall effect thrusters which are popular, large and power hungry but very reliable,

- Electrospray thrusters are relatively inexpensive and simple. The propellant can be solid or a liquid which melts down quickly and then is accelerated out of the nozzle with an electric field. It is an affordable technology, and a moderately simple technology.

- And pulsed plasma/vacuum arc thrusters which have the advantage of being a very, very simple and affordable technology. It uses an electric arc to ablate the material which becomes the fuel. The fuel material can be a light metal or a high technology plastic.

“We’ve recently acquired a demonstration kit for a pulsed plasma type thruster. We are in the early stages of engaging our volunteers to perform an in-depth analysis of this thruster as part of our investigation to determine which thruster is the most appropriate for AMSAT.

ANS: ”Interesting. How can we learn more?”

JB: “I gave a 20-minute presentation on this at the recent AMSAT Annual Space Symposium, which you can see on YouTube. The presentation includes a short demonstration of a pulse plasma type thruster made by Hypernova Space. The demonstration includes firing the thruster, the control software, and some of the output data.”

ANS: Thank you for your time, Jonathan!

Link to Jonathan Brandenburg’s presentation is:
https://www.youtube.com/watch?v=pcO4-h7bbxs&t=465s

[ANS thanks Jonathan Brandenburg, KF5IDY, AMSAT Assistant VP – Engineering

and Mark
Blackwood, KI5AXK for the above information.]

+=+=+=

Need new satellite antennas? Purchase an M2 LEO-Pack
from the AMSAT Store. When you purchase through
AMSAT, a portion of the proceeds goes towards
Keeping Amateur Radio in Space.
https://amsat.org/product-category/hardware/

+=+=+=

The ISS callsign is presently scheduled to be RSØISS
The downlink frequency is presently scheduled to be 145.800 MHz
The scheduled crewmember is Konstantin Borisov
The ARISS mentor is RV3DR

Contact is go for Wed 2023-11-22 16:40 UTC

Comments on making general contacts

I have been seeing a lot of traffic on Facebook and I suspect on other social media sites with people asking why they are not hearing the crew make general contacts. First off the crew is very busy on the ISS and they simply may not have the time to just pick up the microphone and talk. Also, one needs to be aware of their normal daily schedule. I have listed below the constraints that we at ARISS have to follow in order to schedule the school contacts. Hopefully this will help you better schedule your opportunities.

Typical daily schedule

Wakeup to Workday start= 1.5 hours
Workday start to Workday end=12 hours
Workday end to Sleep= 2 hours
Sleep to wakeup= 8.5 hours

The crew's usual waking period is 0730 - 1930 UTC. The most common times to find a crew member making casual periods are about one hour after waking and before sleeping, when they have personal time. They're usually free most of the weekend, as well.

SSTV events are not that often. So please check out https://www.ariss.org/ for the latest information or watch for the ARISS announcements.

And don’t forget that the packet system is active.

As always, if there is an EVA, a docking, or an undocking; the ARISS radios are turned off as part of the safety protocol.

ARISS Radio Status

Columbus Module radios:

IORS (Kenwood D710GA) – STATUS - Misconfigured. Default mode is for cross band repeater (145.990 MHz up {PL 67} & 437.800 MHz down).
* Powering off for Progress undock on November 29. OFF TBD . ON TBD.
* Powering off for Progress docking on December 01. OFF TBD . ON TBD.
* Capable of supporting USOS scheduled voice contacts, packet and voice repeater ops.

Service Module radios:

IORS (Kenwood D710GA) – STATUS - Temporarily stowed. Default mode is for packet operations (145.825 MHz up & down)
* Capable of supporting ROS scheduled voice contacts, packet, SSTV and voice repeater ops.

SSTV (Kenwood D710) – STATUS - OFF. Default mode is for scheduled SSTV operations (145.800 MHz down)
* Next planned operation date(s) TBD.
* Specifically configured for SSTV ops.

The latest information on the operation mode can be found at https://www.ariss.org/current-status-of-iss-stations.html

The latest list of frequencies in use can be found at
https://www.ariss.org/contact-the-iss.html

[ANS thanks Charlie Sufana, AJ9N, one of the ARISS operation team mentors
for the above information]

Upcoming Satellite Operations

No scheduled operations are listed at this time.

[ANS thanks Ian Parsons, K5ZM, AMSAT rover page manager, for the above
information]

Hamfests, Conventions, Maker Faires, and Other Events

AMSAT Ambassadors provide presentations, demonstrate communicating through
amateur satellites, and host information tables at club meetings, hamfests,
conventions, maker faires, and other events.

AMSAT Ambassador Clint Bradford, K6LCS, says,

"Think a 75-minute presentation on "working the easy satellites" would be
appropriate for your club or event? Let me know by emailing me at
k6lcsclint (at) gmail (dot) com or calling me at 909-999-SATS (7287)!"

Clint has NEVER given the exact same show twice: EACH of the 150+
presentations so far has been customized/tailored to their audiences.

[ANS thanks Clint Bradford, K6LCS, and AMSAT for the above information]

Satellite Shorts From All Over

+ NASA has launched a new no cost, ad-free streaming service featuring live
coverage and original video series. Details on the service, called NASA+,
can be found at https://plus.nasa.gov/ (ANS thanks NASA for the above
information)

+ Aviation Week has published an article entitled "CubeSats: How How An
Accidental Standard Launched A New Space Age" which features quotes from
AMSAT's 2023 Symposium keynote speaker Bob Twiggs.
https://aviationweek.com/aerospace/commercial-space/cubesats-how-accidental-standard-launched-new-space
-age
"

+ DO-64 (Delfi-C3) is rapidly approaching re-entry. Over 350 frames of
telemetry have been submitted by amateur radio operators over the past few
days. (ANS thanks Delfi Space for the above information)

+ Ireland's first satellite - EIRSAT-1 - is scheduled to launch at the end
of the month on a SpaceX Falcon 9 from Vandenberg Space Force Base. The
satellite's downlink is 437.100 MHz (ANS thanks the EIRSAT-1 team for the
above information)

Join AMSAT today at https://launch.amsat.org/

In addition to regular membership, AMSAT offers membership to:

* Societies (a recognized group, clubs or organization).
* Primary and secondary school students are eligible for membership at one-half the standard yearly rate.
* Post-secondary school students enrolled in at least half time status shall be eligible for the student rate for a maximum of 6 post-secondary years in this status.
* Memberships are available for annual and lifetime terms.

Contact info [at] amsat.org for additional membership information.

73 and remember to help Keep Amateur Radio in Space!

This week's ANS Editor,

Paul Stoetzer, N8HM
n8hm [at] amsat.org